STEERING COLUMN

1996 STEERING Steering Columns - General Motors Corp.

DESCRIPTION

All models use a collapsible steering column with an integral ignition switch and locking device. Some models include tilt wheel, gear shift interlock device, and/or Supplemental Inflatable Restraint (SIR) system.

DISABLING & ACTIVATING AIR BAG SYSTEM

1. To disable air bag system, turn ignition switch to OFF position. Remove SIR fuse from fuse block. Disconnect Yellow SIR connector at base of steering column. On models equipped with passenger-side air bag, also disconnect Yellow connector under right side of instrument panel. INFLATABLE RESTRAINT indicator light will come on. This is normal.
2. Wait 10 minutes before working on vehicle. All connectors used on SIR system use Connector Position Assurance (CPA) clips to ensure connector retention.
3. To activate air bag system, turn ignition switch to OFF position. Connect Yellow 2-pin connector and CPA clip at base of steering column and/or under right side of instrument panel. Install SIR fuse. Turn ignition switch to RUN position. INFLATABLE RESTRAINT indicator light should go off. For more information, see **AIR BAG RESTRAINT SYSTEM** article in ACCESSORIES/SAFETY EQUIP section.

ADJUSTMENTS

PARK LOCK CABLE

Ensure gear shift lever is in Park. turn lock cylinder to PARK-LOCK position and remove key. Using Park Lock Cable Pliers (J-41396), unlock adjuster ring on cable assembly. Pull on cable until park lock latch contacts gear shift lever. Release cable. Using park lock cable pliers, lock adjuster ring securely in place.

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting battery.

NOTE: Use only specified screws. Using screws that are too long may prevent column from compressing upon impact.

STEERING WHEEL & HORN PAD

WARNING: Wait 10 minutes after disabling air bag system before servicing system. Servicing air bag system before 10 minutes may cause accidental air bag deployment and possible personal injury.

Removal (With Air Bag)

1. Disable air bag system. See **DISABLING & ACTIVATING AIR BAG SYSTEM** . Inflator module is located on steering wheel hub. Turn steering wheel 90 degrees to access rear shroud hole. Insert screwdriver and push leaf spring to release pin. Turn steering wheel 180 degrees to access remaining shroud holes. Repeat release procedure with screwdriver.
2. Partially remove inflator module from top. Disconnect steering wheel inflator module connector, CPA clip and horn contact from inflator. Remove inflator module.
3. Position steering wheel straight ahead. Remove snap ring and steering wheel retaining nut. Mark steering wheel and shaft for reassembly reference. Using Steering Wheel Puller (J-1859-03), remove steering wheel.

CAUTION: To prevent damage to canceling cam and switch assembly, turn signal switch must be in neutral position before steering wheel is installed.

Installation

1. Ensure turn signal switch is in neutral position. Install and align steering wheel. DO NOT misalign steering wheel. Install and tighten steering wheel retaining nut to 30 ft. lbs. (41 N.m). Install snap ring.
2. Install horn contact, steering wheel inflator module connector and CPA clip. Install inflator module to steering wheel. Press inflator module firmly until all latch pins are engaged.
3. To complete installation, reverse removal procedure. Check INFLATABLE RESTRAINT indicator light to ensure system is functioning properly. For more information, see **AIR BAG RESTRAINT SYSTEM** article in ACCESSORIES/SAFETY EQUIP section.

Removal (Without Air Bag)

Disconnect negative battery cable. Remove horn pad. Remove snap ring and steering wheel

retaining nut. Disconnect horn lead assembly (if equipped). Mark steering wheel and shaft for reassembly reference. Using Steering Wheel Puller (J-1859-03), remove steering wheel.

CAUTION: To prevent damage to canceling cam and switch assembly, turn signal switch must be in neutral position before steering wheel is installed.

Installation

Before installing steering wheel, ensure turn signal switch is in neutral position. Install steering wheel onto steering shaft aligning marks made during removal. DO NOT misalign steering wheel rim more than .79" (20 mm) from centerline. Connect horn lead assembly (if equipped). Install and tighten steering wheel retaining nut to 30 ft. lbs. (41 N.m). Install snap ring and horn pad. Connect negative battery cable.

STEERING COLUMN

NOTE: Although columns are similar, some procedures do not apply to all steering columns.

Removal

1. Disconnect negative battery cable. Disconnect transmission shift linkage from column shift tube levers. Mark position of joint to steering shaft. Remove upper intermediate shaft bolt and nut from steering shaft.
2. Remove steering column support bracket bolts and nuts. Remove support bracket. Remove steering column seal bolts and seal. Remove steering wheel. See **STEERING WHEEL & HORN PAD** . Disconnect electrical connectors at column harness.
3. Disconnect start/neutral switch and back-up light switch electrical connectors (if equipped). Disconnect transmission indicator cable (if equipped). On column shift models, rotate column so shift lever can clear dash opening. On all models, remove steering column assembly.

Installation

To install, reverse removal procedure. Tighten bolts and screws to specification. See **TORQUE SPECIFICATIONS** .

INTERMEDIATE SHAFT

Removal

Set front wheels in straight-ahead position. Mark joint-to-steering shaft position. Mark joint-to-steering gear worm shaft position. Remove intermediate shaft shield screw (if equipped).

Remove shield (if equipped). Remove upper and lower intermediate shaft bolts and nut. Remove intermediate shaft.

Installation

To install, reverse removal procedure. Tighten bolts, nut and screw to specification. See **TORQUE SPECIFICATIONS** .

LOCK CYLINDER (FUNCTIONAL)

Removal & Installation

1. Remove steering column. See **STEERING COLUMN** . Using Modular Column Holding Fixture (J-41352), secure steering column. Remove tilt lever (if equipped). Remove 2 lower shroud screws. Tilt lower shroud down and slide back to disengage locking tabs, then remove lower shroud. Remove upper shroud.
2. Hold key in START position. Using 1/16" Allen wrench, push on lock cylinder retaining pin. Release key to RUN position, and pull lock cylinder set from lock module assembly.
3. To install, insert key into lock cylinder and turn to RUN position. Ensure sector in lock module is in RUN position. Insert lock cylinder into upper cover. Align locking and positioning tabs with slots in lock module assembly, and press lock cylinder into position. To complete installation, reverse removal procedure.

LOCK CYLINDER (NON-FUNCTIONAL)

Removal

1. Remove steering Column. See **STEERING COLUMN** . Using Modular Column Holding Fixture (J-41352), secure steering column. Remove tilt lever, if equipped. Remove 2 lower shroud screws. Tilt lower shroud down and slide back to disengage locking tabs, then remove lower shroud. Remove upper shroud.
2. Remove retaining ring. Remove SIR clockspring assembly. See **AIR BAG RESTRAINT SYSTEM** article in ACCESSORIES/SAFETY EQUIP section. Remove wave washer. Using Lock Plate Compressor (J-23563-SIR), remove and discard retaining ring. Remove shaft lock shield assembly. Remove turn signal cancelling cam.
3. On models with park lock cable, ensure lock cylinder is in OFF-LOCK position and gearshift is in Park. Insert small screwdriver into slot in lock module assembly, push against locking tab on end of cable and remove park lock cable.
4. On all models, remove 3 screws, and remove lock module assembly with upper shroud. Remove backing plate from lock module assembly. Mark 2 sector gears at PARK-LOCK position for installation reference. See **Fig. 1** . Remove both sector gears.
5. Using 1/8" burring tool, remove positioning tab on end of lock cylinder. See **Fig. 2** . Remove all burrs in and around lock module assembly and lock cylinder. From inside

lock module assembly, push on locking tab and pull out lock cylinder. Clean debris from lock module assembly.

NOTE: Ensure 2 sector gears are properly aligned at OFF-LOCK position, or lock cylinder will be improperly timed.

Installation

1. Install sector gears and backing plate to lock module assembly, ensuring reference marks are aligned. Ensure sector gear in lock module is in OFF-LOCK position. Insert key in lock cylinder, and turn key to OFF-LOCK position. Align position and locking tabs with slots in lock module assembly and press lock cylinder into position. Turn lock cylinder to ACC position, and check alignment of arrows on sector gears (arrows should point toward each other). Turn lock cylinder back to OFF-LOCK position.
2. To complete installation, reverse removal procedure. When installing turn signal cancelling cam, lubricate lower brass surface with synthetic grease. Use NEW shaft lock retaining ring. Tighten all screws to specification. See **TORQUE SPECIFICATIONS** . Adjust park lock cable, if necessary. See PARK LOCK CABLE in ADJUSTMENTS.

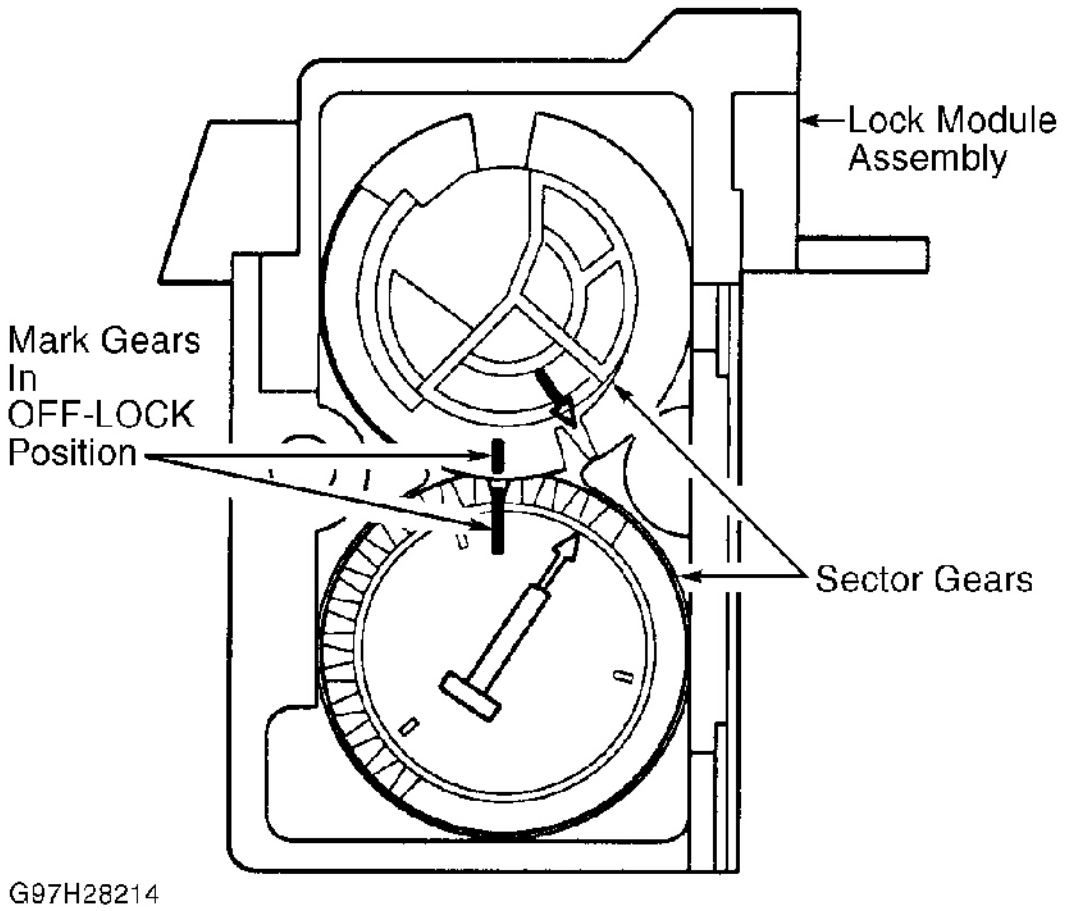


Fig. 1: Aligning Sector Gears
Courtesy of GENERAL MOTORS

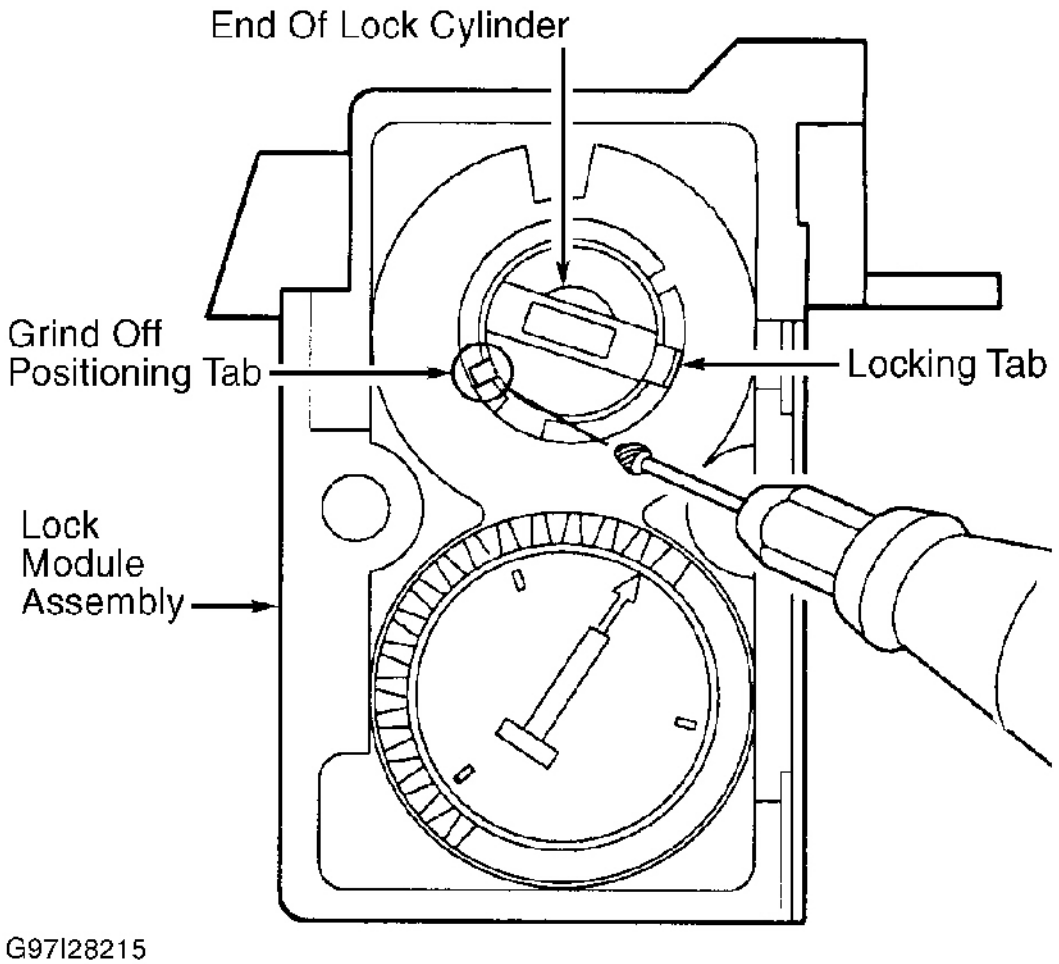


Fig. 2: Removing Lock Cylinder Positioning Tab
Courtesy of GENERAL MOTORS

TURN SIGNAL & MULTIFUNCTION SWITCH

Removal

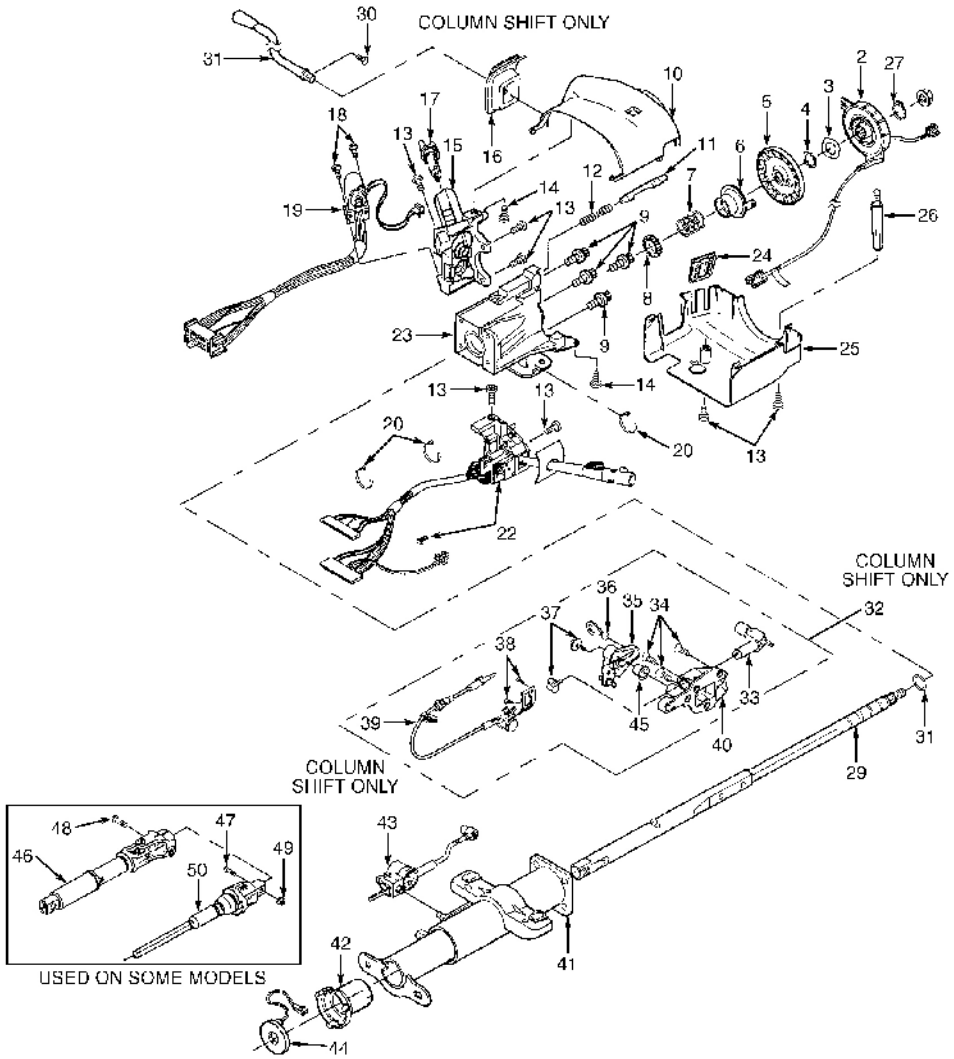
1. Ensure lever is in center of OFF position. Disconnect negative battery cable. Disable air bag system (if equipped). See **DISABLING & ACTIVATING AIR BAG SYSTEM** . Remove steering wheel. See **STEERING WHEEL & HORN PAD** . Remove knee bolster, if necessary.
2. Remove bolts/screws and lower column cover. Remove bolts/screws and upper column cover. Remove lock cylinder, if necessary. See **LOCK CYLINDER (FUNCTIONAL)** . Remove harness strap. Disconnect steering column electrical connector. Disconnect turn signal and multifunction switch Gray and Black connectors. Remove turn signal and multifunction switch.

Installation

Install turn signal and multifunction switch. Using small flat-blade screwdriver, compress electrical contact and move switch into position. Ensure electrical contact rests on cancelling cam. See **Fig. 3** -4. Tighten turn signal and multifunction switch screws to specification. See **TORQUE SPECIFICATIONS** . To complete installation, reverse removal procedure.

OVERHAUL

NOTE: Use illustrations for exploded view of steering columns. See Fig. 3 -4.



1. Lock Nut
2. Air Bag Clockspring
3. Wave Washer
4. Retaining Ring
5. Shift Lock Shield
6. Cancelling Cam
7. Upper Bearing Spring
8. Thrust Washer
9. Torx Head Screw
10. Upper Shroud
11. Lock Bolt Assembly
12. Lock Bolt Spring
13. Self-Tapping Screw
14. Torx Head Screw
15. Lock Module
16. Shift Lever Seal
17. Lock Cylinder
18. Self-Tapping Screw
19. Ignition & Key Alarm Switch
20. Harness Strap
21. Axial Position Assurance Connector
22. Multifunction Switch
23. Steering Column Housing
24. Shroud Protector
25. Lower Shroud
26. Shroud Mounting Stud
27. Retaining Ring
28. Retaining Ring
29. Steering Shaft
30. Shift Lever Screw
31. Shift Lever
32. Shift Assembly (Column Shift Only)
33. Shift Lever Clevis
34. Screw
35. Cable Shift Cam
36. Ball & Actuator Assembly
37. Flange Head Bolt
38. Self-Tapping Screw
39. Park Lock Cable
40. Gear Shift Lever Support Bracket
41. Shift Column Jacket
42. Adapter & Bearing Assembly
43. Electrical (BTSI) Actuator
44. EVO Sensor
45. Cam Bushing
46. Yoke & Intermediate Steering Shaft
47. Locking Bolt
48. Pinch Bolt
49. Hex Nut
50. Coupler & Steering Shaft

Fig. 3: Exploded View Of Non-Tilt Steering Column (Typical)
Courtesy of GENERAL MOTORS

1. Lock Nut
2. Air Bag Clockspring
3. Wave Washer
4. Retaining Ring
5. Shift Lock Shield
6. Cancelling Cam
7. Upper Bearing Spring
8. Upper Bearing Inner Race Seat
9. Inner Race
10. Upper Shroud
11. Lock Bolt Assembly
12. Lock Bolt Spring
13. Self Tapping Screw
14. Torx Head Screw
15. Lock Module
16. Shift Lever Seal
17. Lock Cylinder
18. Self-Tapping Screw
19. Ignition & Key Alarm Switch
20. Tilt Spring
21. Spring Guide
22. Harness Strap
23. Axial Position Assurance Connector
24. Multifunction Switch
25. Tilt Head Assembly
26. Shroud Protector
27. Lower Shroud
28. Shroud Mounting Stud
29. Retaining Ring
30. Shift Lever Screw
31. Shift Lever
32. Tilt Lever Assembly
33. Upper Race & Shaft Assembly
34. Centering Sphere
35. Joint Preload Spring
36. Lower Steering Shaft Assembly
37. Linear Shift Assembly
38. Shift Lever Clevis
39. Screw
40. Cable Shift Cam
41. Ball & Actuator Assembly
42. Flange Head Bolt
43. Self-Tapping Screw
44. Park Lock Cable
45. Gear Shift Lever Support Bracket
46. Torx Head Screw
47. Pivot Pin
48. Steering Column Support
49. Shift Column Jacket
50. Adapter & Bearing Assembly
51. Electrical (BTSI) Actuator
52. EVO Sensor
53. Cam Bushing
54. Coupling & Steering Shaft Assembly
55. Yoke & Intermediate Steering Shaft
56. Locking Bolt
57. Pinch Bolt
58. Hex Nut

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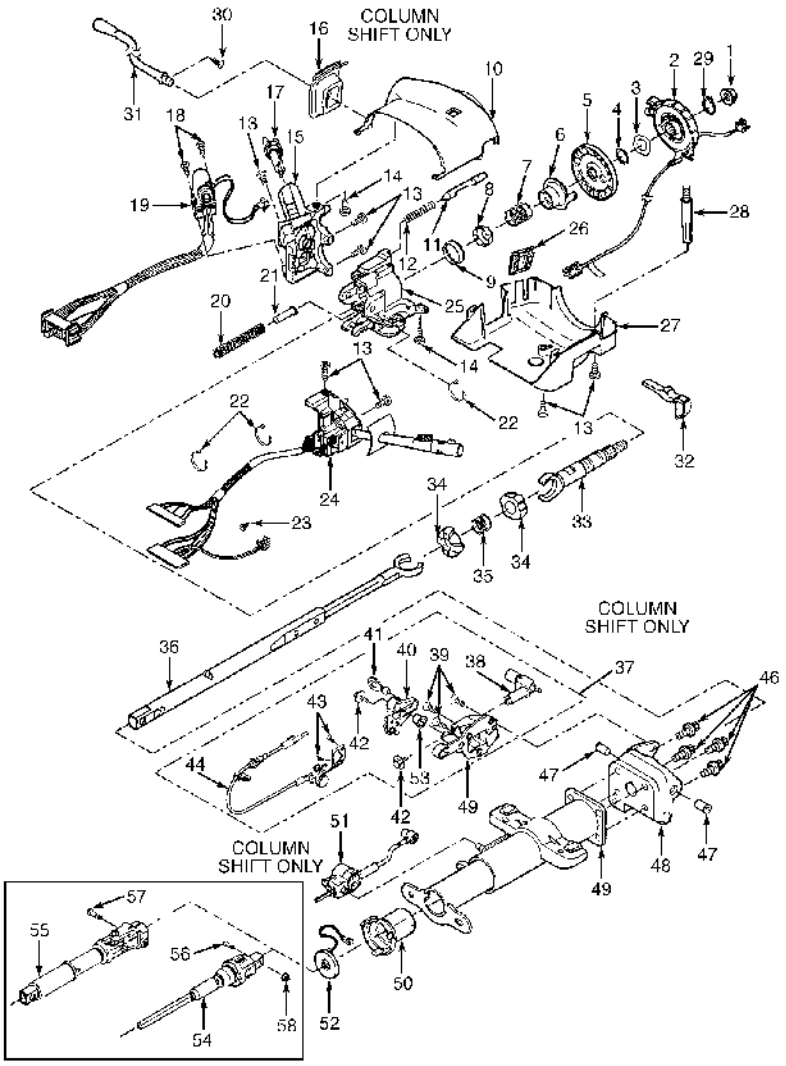

Fig. 4: Exploded View Of Tilt Steering Column (Typical)
Courtesy of GENERAL MOTORS

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Lower Intermediate Shaft Bolt	25 (34)
Steering Column Support Bracket Bolts	22 (30)
Steering Wheel Retaining Nut	30 (41)
Upper Intermediate Shaft Bolt/Nut	45 (61)

ENGLISH (N·m)	
Steering Column Support Bracket Bolts	22 (3
Steering Wheel Retaining Nut	80 (300
Upper Intermediate Shaft Bolt/Nut	35 (45
Ignition Switch Screw	35 (3.8)
Intermediate Shaft Shield Screw	53 (6.0)
Turn Signal Switch Screws	35 (3.8)